# TASCAM
TEAC Professional Division

IF-AE8

Digital Audio Interface Unit
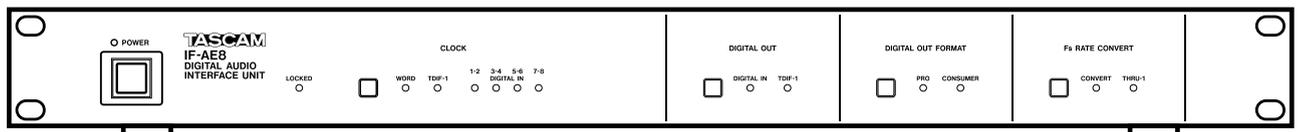
OWNER'S MANUAL

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons..

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This appliance has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.
Model number _____
Serial number _____

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Important Safety Precautions

IMPORTANT (for U.K. Customers)

DO NOT cut off the mains plug from this equipment.
If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appropriate safety approved extension lead or consult your dealer.

If nonetheless the mains plug is cut off, remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.

If this product is not provided with a mains plug, or one has to be fitted, then follow the instructions given below:

IMPORTANT. DO NOT make any connection to the larger terminal which is marked with the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-and-YELLOW.

The wires in the mains lead on this product are coloured in accordance with the following code:

> **BLUE:** **NEUTRAL**
> **BROWN:** **LIVE**

As these colours may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

When replacing the fuse only a correctly rated approved type should be used and be sure to re-fit the fuse cover.

IF IN DOUBT — CONSULT A COMPETENT ELECTRICIAN.

For U.S.A

TO THE USER

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residental area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

Changes or modifications to this equipment not expressly approved by TEAC CORPORATION for compliance could void the user's authority to operate this equipment.

For the consumers in Europe
WARNING
This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Pour les utilisateurs en Europe
AVERTISSEMENT
Il s'agit d'un produit de Classe A. Dans un environnement domestique, cet appareil peut provoquer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre des mesures appropriées.

Für Kunden in Europa
Warnung
Dies is eine Einrichtung, welche die Funk-Entstörung nach Klasse A besitzt. Diese Einrichtung kann im Wohnbereich Funkstörungen versursachen ; in diesem Fall kann vom Betrieber verlang werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:
- **Read all of these Instructions.**
- **Save these Instructions for later use.**
- **Follow all Warnings and Instructions marked on the audio equipment.**

1) Read Instructions — All the safety and operating instructions should be read before the product is operated.

2) Retain Instructions — The safety and operating instructions should be retained for future reference.

3) Heed Warnings — All warnings on the product and in the operating instructions should be adhered to.

4) Follow Instructions — All operating and use instructions should be followed.

5) Cleaning — Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6) Attachments — Do not use attachments not recommended by the product manufacturer as they may cause hazards.

7) Water and Moisture — Do not use this product near water — for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.

8) Accessories — Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

9) A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

10) Ventilation — Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

11) Power Sources — This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

12) Grounding or Polarization — This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

13) Power-Cord Protection — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

14) Outdoor Antenna Grounding — If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

"Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Section 820-40 of the NEC which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

**Example of Antenna Grounding as per
National Electrical Code, ANSI/NFPA 70**

ANTENNA
LEAD IN
WIRE

GROUND
CLAMP

ANTENNA
DISCHARGE UNIT
(NEC SECTION 810-20)

ELECTRIC
SERVICE
EQUIPMENT

GROUNDING CONDUCTORS
(NEC SECTION 810-21)

GROUND CLAMPS

POWER SERVICE GROUNDING
ELECTRODE SYSTEM
(NEC ART 250. PART H)

NEC - NATIONAL ELECTRICAL CODE
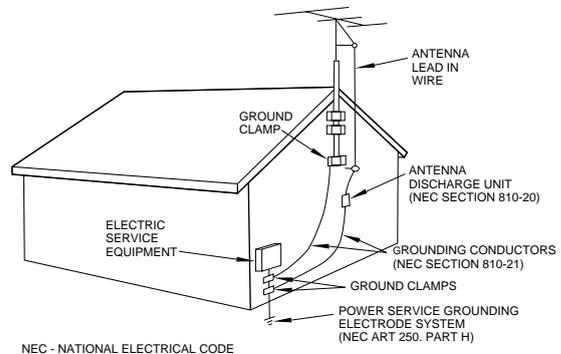
15) Lightning — For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

16) Power Lines — An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

17) Overloading — Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in risk of fire or electric shock.

18) Object and Liquid Entry — Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

19) Servicing — Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

20) Damage Requiring Service — Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a) when the power-supply cord or plug is damaged.

b) if liquid has been spilled, or objects have fallen into the product.

c) if the product has been exposed to rain or water.

d) if the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.

e) if the product has been dropped or damaged in any way.

f) when the product exhibits a distinct change in performance – this indicates a need for service.

21) Replacement Parts — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

22) Safety Check — Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

23) Wall or Ceiling Mounting — The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

24) Heat — The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

IF-AE8 Digital Audio Converter

The TASCAM IF-AE8 provides a convenient way of exchanging digital audio data between TDIF-1-equipped devices, such as DTRS recorders, and AES/EBU devices.

A single TDIF-1 connector carries eight channels of digital input and output. Four XLR-type connectors accept four two-channel input signals in AES3-1992 format, and another four XLR-type connectors output four two-channel input signals in AES3-1992 format.

The word synchronization is selectable, using a front panel switch, from any of the four **AES/EBU** inputs, from the TDIF-1 source, or from an external independent word clock source.

The word clock source can be used as the clock source for sampling frequency conversion. All standard rates (32 kHz, 44.1 kHz and 48 kHz) are supported for input and output.

If sampling frequency conversion is carried out, the IF-AE8 will generate an independent clock signal, based on the target frequency, so that other units may be synchronized to it.

The signal transmitted from the **AES/EBU** outputs can be selected to come from the **AES/EBU** input signals or from those received at the TDIF-1 connector, using a front panel switch.

Format conversion is possible with up to 24-bit data with TDIF digital audio format, and 20-bit with AES3-1992 format data if no sample rate conversion is performed (20-bit data for both formats if the sampling frequency is converted).

The digital audio output format is selectable as either professional or consumer format using a front panel switch.

1   Front panel
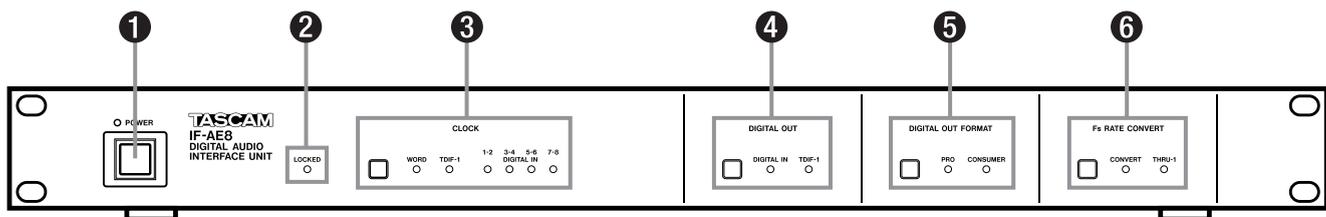
❶ POWER switch and indicator

Push the **POWER** switch once to turn on power, and again to turn it off. The **POWER** indicator lights when power is supplied to the IF-AE8.

❷ LOCKED indicator

When a valid clock signal is received at the selected clock source, this indicator will light.

❸ CLOCK switch and indicators

This switch allows you to cycle between the six possible clock sources for the IF-AE8: the **WORD SYNC IN ❿** connector, the **DIGITAL I/O (TDIF-1) ❾** connector, or any of the four two-channel AES/EBU connectors (**DIGITAL I/O (AES/EBU) INPUTS (1/2, 3/4, 5/6, 7/8) ❽**), as shown by the indicators to the right of the switch.

WARNING

There should usually never be more than one word clock signal in a digital audio system. If there are not, at worst, damage may occur to speakers, amplifiers, etc. as a result of

high-frequency noise generated by word clock incompatibilities.

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❹ DIGITAL OUT switch and indicators

This switch allows you to select the source of the digital audio signals that are output from the **DIGITAL I/O (AES/EBU) OUTPUTS (1/2, 3/4, 5/6, 7/8) ❼**. The source can either be the signals received at the **AES/EBU** inputs ❽ (**DIGITAL IN**) or at the **TDIF-1** connector ❾.

If the **TDIF-1** option is selected, the eight channels of the TDIF-1 audio are mapped on a "one-to-one" basis to the eight **AES/EBU** audio output channels.

If the **DIGITAL IN** option is selected, the input data received at the **AES/EBU** ports is passed through to the corresponding output ports. However, it may be passed through the sample rate conversion before reaching the output ports.

❺ DIGITAL OUT FORMAT switch and indicators

The format of the digital audio output from the **AES/EBU** output connectors ❼ may be either professional AES3-1992 format (**PRO**) or

CONSUMER IEC-60958 TYPE II format. The electrical characteristics of the output connectors remain the same, regardless of the data format selected.

❻ Fs RATE CONVERT switch and indicators

This switch provides two settings: **THRU-1** and **CONVERT**.

When the switch is set to **THRU-1**, the input signals (selected using the **DIGITAL OUT** ❹ switch) will be output from the **AES/EBU** output connectors at the same frequency.

When the switch is set to **CONVERT**, the input signals will be output at the sampling frequency of the clock source selected with the **CLOCK** switch ❸.

Note that any of the **DIGITAL I/O (AES/EBU) INPUTS (1/2, 3/4, 5/6, 7/8)** ❽ may be selected as

the clock source for the converted signal. The **DIGITAL I/O (TDIF-1)** ❾ cannot be used as the clock source for conversion, though both it and the **DIGITAL I/O (AES/EBU) OUTPUTS (1/2, 3/4, 5/6, 7/8)** ❼ can be the destination.

NOTE

*The **AES/EBU** unit which provides this clock source may be different from the unit which provides either the input or the output signals. You must, however, make sure that word clock synchronization is correctly carried out.*

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2 Rear panel
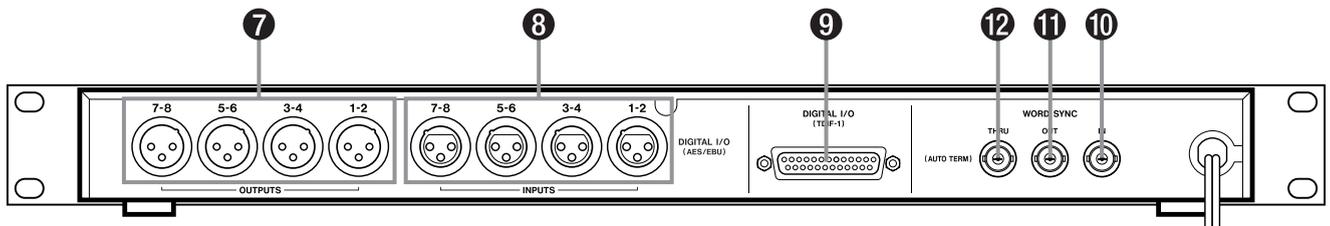
❼ DIGITAL I/O (AES/EBU) OUTPUTS (1/2, 3/4, 5/6, 7/8)

These balanced connectors output digital audio data in AES3-1992 professional or in consumer format, depending on the selection made with the **DIGITAL OUT FORMAT** switch ❺.

The content of the data depends on the setting of the **DIGITAL OUT** switch ❹.

The sampling frequency of the output data depends on the setting of the **Fs RATE CONVERT** switch ❻, and the currently-selected clock source ❸.

❽ DIGITAL I/O (AES/EBU) INPUTS (1/2, 3/4, 5/6, 7/8)

These balanced connectors accept digital audio data in AES3-1992 format.

The signal received at any of these connectors may be selected as the clock source for the IF-AE8 using the **CLOCK** switch ❸

❾ DIGITAL I/O (TDIF-1)

Use this connector to connect a suitably-equipped TDIF-1 digital audio unit (e.g. a DTRS recorder or a TASCAM digital mixing console).

The signals received at this connector may be selected as the word clock source using the **CLOCK** switch ❸.

WARNING

Note that you should always use genuine TASCAM cables, or cables which have been approved for use with TDIF-1 interfaces by TASCAM.

Although these cables appear similar to certain types of computer cables and use similar connectors, the cables themselves are very different, and the different electrical characteristics of the cables can cause damage to the equipment connected with the wrong cables.

If the use of cables other than TASCAM cables causes or results in damage, the warranty is voided.

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❿ WORD SYNC IN

The BNC connector accepts a word clock signal from an external source.

It may be selected as the word clock source for the IF-AE8 using the **CLOCK** switch ❸.

⑪ WORD SYNC OUT

This BNC connector outputs a word clock based on the word clock source selected using the **CLOCK** switch ❸.

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NOTE

*This may or may not be the same as the clock received at **WORD SYNC IN A** and retransmitted through **WORD SYNC THRU** ⑫. However, it is **always** the word clock selected using the **CLOCK** switch ❸.*
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⑫ WORD SYNC THRU

This BNC connector echoes the word clock signal received at **WORD SYNC IN** ⑩. It may or may not be the same signal as is output at **WORD SYNC OUT** ⑪. It is auto-terminating.

3 Application example

In this example, the original material (from two sources) has been mixed to DAT, and has been produced in both professional and consumer formats, and at both 44.1 kHz and 48 kHz sample rates.

The final master data will be recorded and coded on a computer-based system, with an AES/EBU interface.
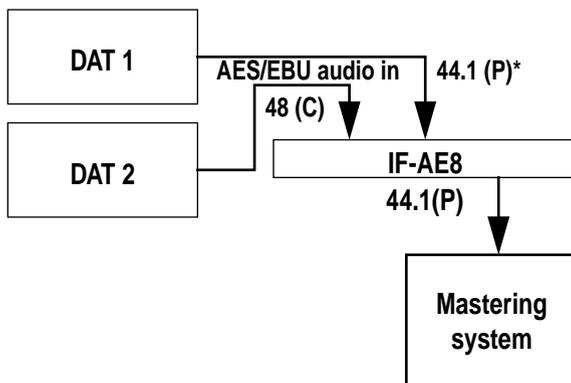
Here, the two DAT recorders are fed through the IF-AE8. Since the resulting data will be at 44.1 kHz, the DAT playing back the material at 44.1 kHz (DAT 1) is selected to act as the clock master.

Since the TDIF-1 I/O is not used here, the **DIGITAL OUT** switch ❹ is set to **DIGITAL IN**.

The word clock is therefore derived from this, and used to resample the 48 kHz material from **DAT 2**, and the **Fs RATE CONVERT** switch ❻ is set to **CONVERT**.

The mastering system takes its word clock through the **AES/EBU** data from the appropriate **DIGITAL OUT** of the IF-AE8.

The **DIGITAL OUT FORMAT** switch ❺ is set to **PRO**, so that the data coming from DAT 2 is converted to professional format data.

4 Specifications

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DIGITAL OUTPUTs (1–2, 3–4, 5–6, 7–8)	XLR-type, balanced outputs
DIGITAL OUTPUT output format	Switchable between professional (AES3-1992) and consumer (IEC-60958 TYPE II) formats
DIGITAL INPUTS (1–2, 3–4, 5–6, 7–8)	XLR-type
DIGITAL INPUT input format	Auto-detect professional (AES3-1992) and consumer (IEC-60958 TYPE II) formats
D IGITAL I/O (TDIF-1)	Conforms to TDIF-1 specification
Clock source	Any of AES/EBU DIGITAL INPUTS, TDIF-1, or WORD SYNC IN (front panel selection)
LOCKED indicator	Lights when valid clock source received at selected input
Valid input Fs rates	48 kHz, 44.1 kHz, 32 kHz
Valid output rates	48 kHz, 44.1 kHz, 32 kHz, taken from CLOCK source
Word length	Up to 24 bits TDIF-1,(20 bits with Fs conversion), 20 bits AES3-1992
WORD SYNC IN	75Ω
WORD SYNC OUT	75Ω, reproduces clock selected from front panel switch
WORD SYNC THRU	75Ω (auto terminating), echoes clock at WORD SYNC IN
Dimensions (w x h x d)	428 x 48 x 194.8 (mm) 16.9 x 1.9 x 7.7 (in.)
Weight	2.6 kg (5.7 lbs)
Power supply	120V (UL), 230V (Europe, Australia)
Power consumption	6 W
Supplied accessories	Rack mounting kit

4.1 Dimensional drawing
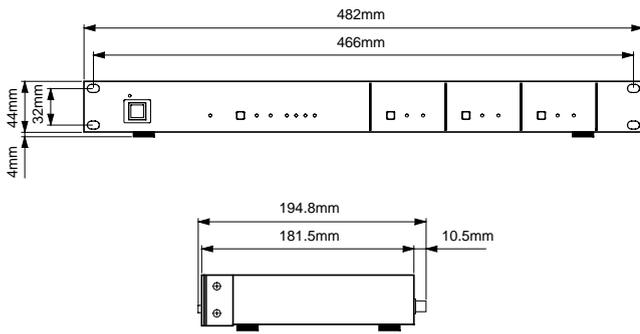
4.2 Rack mounting

Use the supplied rack mounting kit to install the IF-AE8 in a standard 19" rack, as shown below:
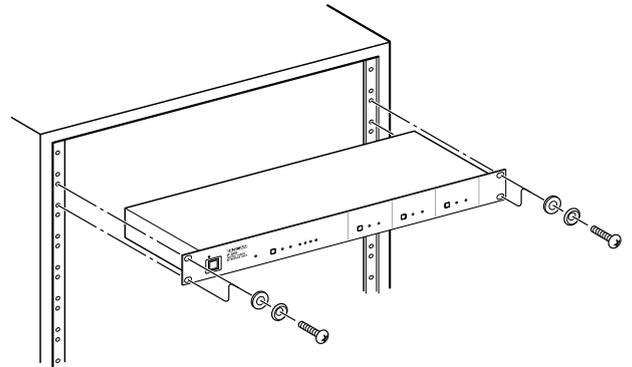
4.3 Block diagram

TASCAM
TEAC Professional Division

IF-AE8